

REMARKS

Claims 1-31 were filed with the application and claims 1-26 and 30-31 are withdrawn, with traverse, as being drawn to non-elected species. Accordingly, claims 27-29 are pending in the application.

The specification is objected to for numerous informalities. The informalities listed in the Office Action have been corrected, and Applicant respectfully requests withdrawal of the objection.

Claims 27-29 are objected to for various informalities. The informalities listed in the Office Action have been corrected, and Applicant respectfully requests withdrawal of the objection. Claims 27-29 are now in condition for allowance, and such action is respectfully requested.

The Examiner divided the claims into three Groups, with Group I having claims 1-26 and 31 drawn to a lock cylinder, Group II with claims 27-29 drawn to a method of re-keying a lock cylinder, and Group III with claim 30 drawn to a method of re-keying a lock cylinder that is patentably distinct from the Group II claims. The Examiner asserts that the claims of Groups I and II are distinct species because, in this case, the product can be used in a materially different process of using the product, such as rekeying the lock cylinder by removing the cylinder and replacing its components. Applicant respectfully disagrees with the examiner.

With respect to Groups I and II, the product of claims 1-26 and 31 cannot be used in a conventional rekeying operation. A conventional lock cylinder includes a plug

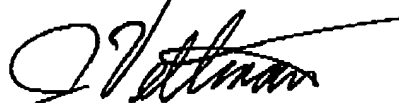
body that rotates in a cylinder body, forming a regular, cylindrical shear interface therebetween. The claimed embodiment forms an irregular shear zone between the plug body and the cylinder body, and each time the lock is rekeyed, the shear zone is changed by moving the shear interfaces of the individual pin assemblies to match the bitting of the new key. Conventional lock cylinders, on the other hand, always have regular, cylindrical shear zones that never change.

In conventional lock cylinders, sets of upper and lower pins are disposed in pin chambers, with each set of upper and lower pins meeting at a pin interface. If all of the pin interfaces coincide with the shear interface, the plug body can rotate in the cylinder body and thereby unlock the lock cylinder. Any mismatch between the shear interface and any of the pin interfaces will prevent the plug body from rotating in the cylinder body.

When a conventional lock cylinder is rekeyed, the lower pins are removed and replaced with different lower pins, the new lower pins having lengths corresponding to the bitting of the new key. When the new key is inserted into the lock cylinder, the pin interfaces between the new lower pins and the original upper pins operatively lie along the shear interface, allowing the plug body to rotate in the cylinder body. However, the rekeying process does not alter the shape or position of the shear interface.

In view of the above comments, Applicant submits that Groups I-III are not distinct and respectfully requests reconsideration of the restriction requirement.

Respectfully submitted,



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AMENDED PARAGRAPHS WITHOUT MARKUPS

[0023] With reference to the figures, a variable shear line lock cylinder 10 is provided and includes an outer cylinder 12, an inner cylinder 14, a plurality of pin assemblies 16, a lock assembly 18, and actuation mechanism 20. The outer cylinder 12 rotatably receives the inner cylinder 14 while the pin assemblies 16 are disposed therebetween. The pin assemblies 16 are operable to selectively prevent rotation of the inner cylinder 14 relative to the outer cylinder 14 and are positionable relative to the inner and outer cylinders 14-12 through engagement with the lock assembly 18. In addition, the actuation mechanism 20 interacts with the pin assemblies 16 and is operable to allow rotation of the inner cylinder 14 relative to the outer cylinder 12, as will be discussed further below.

[0026] The inner cylinder 14 is rotatably received by the bore 32 of the outer cylinder 12 and includes a central bore 50, an arcuate outer surface 52, and an axis of rotation 54. The axis of rotation 54 of the inner cylinder 14 is formed generally coaxially with the longitudinal axis 34 of the outer cylinder 12, such that the inner cylinder 14 is received generally at a central point of the bore 32. In this manner, a recess 56 is formed between the outer surface 52 of the inner cylinder 14 and the inner surface 36 of the outer cylinder 12, as best shown in FIG. 3.

[0035] The lock assembly 18 is operable to fixedly hold the upper and lower shear cylinders 72, 74 relative to the outer and inner cylinders 12, 14. The lock assembly 18 includes an upper lock rack 136, a lower lock rack 138, an upper lock

pin 140, and a lower lock pin 142. The upper lock rack 136 is fixed to the outer cylinder 12 and includes a plurality of locking recesses 144 while the lower lock rack 138 similarly includes a plurality of locking recesses 146 and is fixedly attached to the inner cylinder 14.

[0036] The upper lock pin 140 is an elongate cylindrical member and is operable to be slidably received by the lock bore 96, formed in the upper shear cylinder 72. In addition, the upper lock pin 140 includes a lock post 148 integrally formed therewith for interaction with the upper lock rack 136. Specifically, the lock post 148 is formed generally perpendicular to the upper lock pin 140 and is operable to matingly engage the locking recesses 144 formed in the upper lock rack 136 as the lock pin 140 translates within the lock bore 96.

[0037] The lower lock pin 142 is an elongate cylindrical member and is operable to be slidably received by the lock bore 118, formed in the lower shear cylinder 74. In addition, the lower lock pin 142 includes a lock post 150 integrally formed therewith for interaction with the lower lock rack 138. Specifically, the lock post 150 is formed generally perpendicular to the lower lock pin 142 and is operable to matingly engage the locking recesses 146 formed in the lower lock rack 138 as the lock pin 142 translates within the lock bore 118.

[0045] With reference to the figures, the operation of the lock cylinder 10 will be described in detail. The lock cylinder 10 is shown incorporated into a door assembly 200 having a door 202, a handle 204, and a latch bolt 206, as shown in FIG. 10. The lock cylinder 10 is operable to permit or restrict rotation of the handle

204 relative to the door 202 to selectively lock the door 202 relative to a doorframe 208. Specifically, as the door handle 204 is permitted to rotate, the latch bolt 206 may be selectively retracted from engagement with a latch plate 210 disposed on the doorframe 208. As can be appreciated, as the latch bolt 206 is retracted from engagement with the latch plate 210, the door 202 is permitted to rotate relative to the door frame 208 and when the latch bolt 206 is extended, and engaged with the latch plate 210, the door is restricted from rotating relative to the door frame 208. In this regard, the lock cylinder 10 is operable to selectively permit or restrict rotation of the door 202 relative to the doorframe 208 by selectively permitting and restricting rotation of the door handle 204.

[0058] Once the new key 222 is inserted into the key recess 134, the lock pins 140, 142 are disengaged from the upper and lower pins 76, 78 and re-engage with the respective upper and lower lock racks 136, 138 to fixedly position the upper shear cylinder 72 relative to the outer cylinder 12 and fixedly position the lower shear cylinder 74 relative to the inner cylinder 14. Once the upper lock pin 140 is received by a locking recess 144 of the upper lock rack 136 and the lower lock pin 142 is received by a locking recess 146 of the lower lock rack 138, the new key 222 may be removed. At this point, the new key 222 will be operable to lock and unlock the lock cylinder 10 while the old key 212 will no longer function to do so.

AMENDMENT TO THE DRAWINGS

Applicant submits herewith a copy of Figure 3 with proposed amendments in red.

The numeral 184 is added to conform the drawings to the specification and the leader line from numeral 70 is redirected to indicate the correct surface. Applicant also submits a replacement sheet incorporating the proposed amendments.